

19 February 1959

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Attention:

Subject: ( Proposal for Receiving Antenna

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Enclosures: One copy, [ ] Terms and Conditions  
 Three copies, Detailed Cost Estimate  
 Two copies each, Figure 1 and Figure 2.

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Gentlemen:

In response to your informal request, [ ] is pleased to submit herewith its proposal for the design and fabrication of one (1) receiving antenna. We propose to complete this work for an estimated cost of \$6,730.68 plus a fee of \$538.45, or a total of \$7,269.13 as more fully set forth in the detailed cost estimates attached thereto.

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This receiving antenna will have the following characteristics.

- A. Operational frequency range - 500 to 1000 mcs
- B. Polarization - Vertical
- C. Pattern - Omnidirectional in azimuth within 3 db
- D. Output impedance - 50 ohms
- E. VSWR - not specified
- F. Environment - Shipboard mounting, designed for 80 mph wind.
- G. Mounting - An adjustable bracket is to be supplied to fit a metal mast cross-arm with a 1-1/2 inch minimum and a 4-inch maximum diameter.

It is further specified that minimum antenna measurements be made to determine that the antenna is operating satisfactorily; that size and weight shall be kept to a minimum; and that the antenna will be tested under environmental conditions of:

- A. 95 percent humidity, salt air
- B. Temperature - minus 40 to plus 60 degrees C
- C. Vibration per MIL Std 167
- D. Shock per MIL T-17113

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It is proposed to furnish a conventional sleeve dipole antenna with an adjustable mounting bracket so designed that the longitudinal axis of the dipole is perpendicular to the mast cross-arm. The antenna mounted in this position will be vertically polarized and the pattern of the dipole will be omnidirectional in azimuth. Since the omnidirectivity of the antenna will be affected by the presence of the mast cross-arm, it is proposed to test the antenna with a simulated mast cross-arm to fix the relative position of the antenna to the mast cross-arm in a position to give optimum pattern characteristic.

The basic material proposed for the dipole is aluminum; however, some of the internal components may be dissimilar metals (connectors, etc.) They will be electroplated to provide increased internal strength and eliminate corrosion problems.

The framework of the dipole will be heliarced and the internal components will be joined with an approved aluminum solder.

The dipole will be furnished with prime coat per  STD 140-002,  Std 100-001 Class A finish, and then painted with two coats of number 2635 Navy gray enamel with thinner TT 306 added.

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Figure 1 illustrates the general configuration of the dipole placed on a cross-member of the ship. The dipole will be designed to withstand a 90 mph wind plus all environmental conditions encountered by electronic equipment at sea.

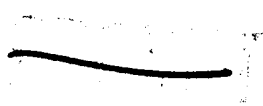
Figure 2 shows a proposed clamping device to fit diameters of 1-1/2 to 4 inches. The clamping device is composed of two flexible metal straps which are adjustable.

Output connector will be a type "N" jack similar to UG58A/U.

It is proposed to perform the following tests to determine the satisfactory operation of the antenna:

#### 1.0 Electrical Tests

1.1 Patterns. Both E plane and H plane patterns of the antenna mounted on a simulated mast cross-arm will be measured at three frequencies: low end, center, and high end of the specified frequency band.



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1.2 VSWR . The voltage standing wave ratio of the antenna will be measured at the output jack of the antenna, with a 50 ohm line, at 50 mc increments over the specified frequency range.

1.3 Gain . The gain of the antenna, relative to an isotropic source (or a standard reference dipole) will be measured at 100 mc increments over the specified frequency band.

## 2.0 Environmental Tests

2.1 Vibration Tests. Each of the tests outlined herein shall be conducted separately in each of the three principal directions of vibration. All tests in one direction shall be completed before proceeding to tests in another direction.

2.1.1 Exploratory Vibration Test. To determine the presence of resonances in the antenna under test, the antenna shall be vibrated at frequencies from 5 cps to 33 cps, at a table vibratory amplitude of  $0.010 \pm .002$  inch (Single Amplitude). The change in frequency shall be made in discrete frequency intervals of 1 cps and maintained at each frequency for approximately 15 seconds. The frequencies at which resonances occur shall be noted

2.1.2 Variable Frequency Test. The antenna shall be vibrated from 5 cps to 33 cps, in discrete frequency intervals of 1 cps, at the amplitudes shown in Table I. The vibration shall be maintained for 5 minutes at each integral frequency.

2.1.3 Endurance Test. The antenna shall be vibrated for a total period of at least two hours, at the resonance frequencies chosen by the test engineer. If no resonance is observed, this test shall be performed at 33 cps. The amplitudes of vibration shall be in accordance with Table I.

Table I - Amplitudes of Vibration

<u>Frequency Range</u> (cps)	<u>Table Amplitude (Single)</u> (inch)
5 to 15	$0.030 \pm 0.006$
16 to 25	$0.020 \pm 0.004$
26 to 33	$0.010 \pm 0.002$

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2.2 Shock Tests. Shock tests shall be made on shock testing machine conforming to Drawing 10-T-2145-L (Buships). A total of nine blows shall be applied, three blows being applied parallel to each of the three principal axes of the antenna. The height of hammer drops shall be 1, 2, and 3 feet.

2.3 Temperature Tests

2.3.1. Low Temperature Test. The antenna shall be placed in a test chamber with an orientation similar to its normal installed position. The temperature of the test chamber shall be lowered to  $-40^{\circ}\text{C}$ . After the temperature of the antenna has stabilized, the antenna shall be operated.

2.3.2 High Temperature Test. Upon completion of the low temperature test, the temperature of the test chamber shall be raised to  $+60^{\circ}\text{C}$ . After the temperature of the antenna has been stabilized, the antenna shall be operated.

2.4 Salt Spray Test. The antenna shall be subjected to the salt spray test described in paragraph 4.5, MIL-E-5422D (50 hour test).

Electrical checks will be made before, during and after the various environmental tests to determine effects of the environmental tests on performance.

No manufacturing drawings are to be supplied. The antenna is to be built from engineering sketches.

No technical reports are to be supplied.

One reproducible copy of all acceptance test data will be supplied to the addressee.

Proposed delivery of one (1) antenna and test data is forty-five (45) days from receipt of one copy of the fully executed contract at

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This bid is valid for a period of ninety (90) days from the date of this letter.

We are enclosing one copy of our Terms and Conditions which must be taken into consideration in the preparation of a contract.

This document contains information affecting the national defense of the United States within the meaning of the espionage laws, Title 18, U.S.C., Sec. 793 and 794, and the transmission or revelation of its contents in any manner to an unauthorized person is prohibited by law.

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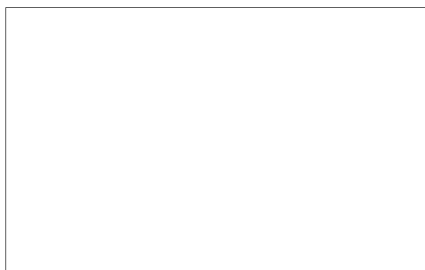
We appreciate the opportunity of submitting this proposal, and should further information be desired, please contact



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Very truly yours,



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Contract Administrator

LHW:glf

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TERMS AND CONDITIONS

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The estimates for direct labor in our cost breakdowns are based on average hourly rates taken from our latest bi-weekly pay period and in those cases where the work will be performed beyond a six (6) month period, we have included in our detailed cost breakdowns an estimated amount to cover anticipated labor increases which we expect to experience during the life of the proposed contract. This is based on our past experience since June 1954.

It is not anticipated at this time that additional employees will be required to perform the work outlined in the applicable specifications to this project.

We represent that we have not employed or retained any company or person other than a bona fide full time employee to solicit or secure this contract, and have not paid or agreed to pay any company or person any fee, commission, percentage, or brokerage fee contingent upon or resulting from the award of this contract.

We do not anticipate subcontracting any of the engineering and development work involved in this proposal.

All of our cost-plus-fixed fee contracts with the Government are amended on a calendar year basis to incorporate the fixed overhead rate negotiated with the Navy Department. The Navy Contract Audit Division is the cognizant Government auditing agency for our Company. The current negotiated overhead rate article in ASPR is satisfactory; however, it is suggested that the following paragraph be incorporated into the schedule of the contract.

"For billing purposes, the overhead rates acceptable to the Contracting Officer or his authorized representative will be applicable subject to adjustment and conformity with the ASPR clause entitled 'Negotiated Overhead Rates.' The first period as contemplated by Para. B of the Clause entitled 'Negotiated Overhead Rates,' will end 31 December 1959 and subsequent periods will be succeeding calendar year periods or such other period as may be mutually agreed to."

We wish to advise that our travel policies were revised and approved by the Government as of December 1958. It is imperative that the contract make provision for subsistence and travel as direct charges as follows:

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"The cost of necessary travel and subsistence will be reimbursed to the Contractor at actual cost or on a per diem basis consistent with the Contractor's standard policy for the labor category concerned, provided that, such expense is chargeable directly to this contract in accordance with the Contractor's established method of distributing such expenses.

No cash discount is offered for prompt payment. Our terms are net 30 days.

In the event an award is made to [ ] it is assumed that the contract will carry a Defense Order Rating, together with a CMP allotment for critical materials.

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Unless otherwise stipulated in our proposal letter covering this procurement, we do not anticipate the procurement of additional facilities, machine tools, capital equipment, test equipment, etc., in order to perform this work, which will be charged against any contract resulting from this procurement.

The prices quoted in this proposal do not include any state, local sales, use or other taxes, but do include all applicable Federal taxes, including Federal excise taxes and other applicable state and local taxes in effect at the date of this proposal.

It is not anticipated that any royalties will be paid for the use of inventions or as fees for technical services or engineering assistance.

Financing in the form of advanced payments and/or loans will not be required.

This proposal is submitted on the basis of the contractor's being reimbursed 100% of costs incurred. In the event this particular procurement falls within the requirements of ASPR 3-404.3(d), where interim payments will not exceed 80% of the costs incurred by the contractor, we reserve the right to revise upward the percentage of fixed fee indicated in this proposal. In this connection your attention is invited to paragraph (d) of ASPR 3-404.3 which states in part, "Application of this policy need not affect the method of payment of the fee, but the extent of the contractor's capital investment in the performance of the contract will be taken into consideration in fixing the amount of fee or profit."

If this proposal is submitted on the basis of any form or type of fixed price, it is imperative that any resulting contract include the standard ASPR provision for progress payments in the amount of 70% of actual costs incurred.

In the event of a conflict between the terms and conditions contained herein and [ ] proposal letter, the contents of the proposal letter will take precedence.

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[ ]  
Assistant Secretary

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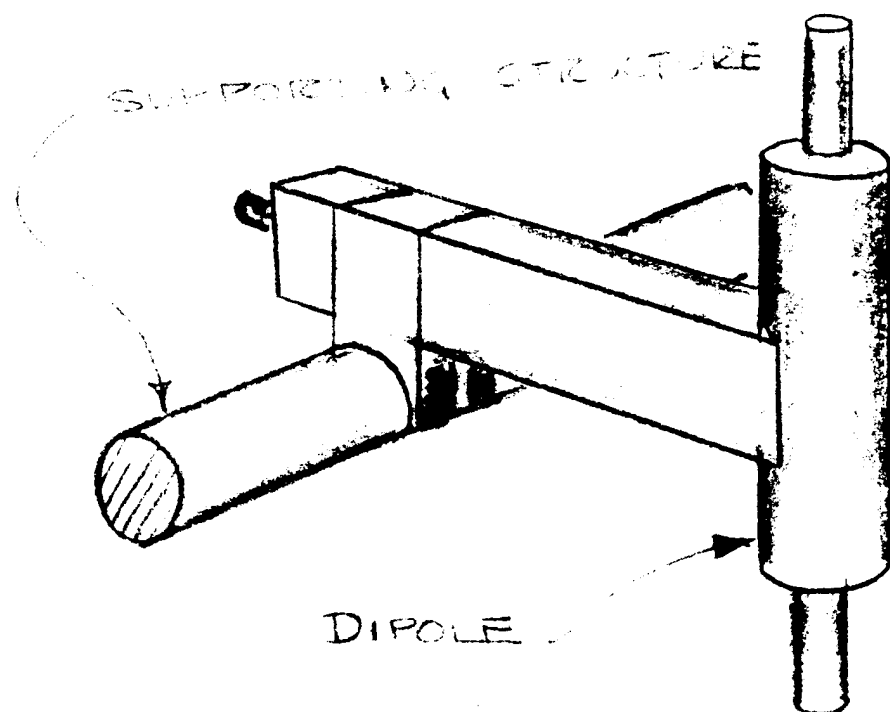


FIGURE 1

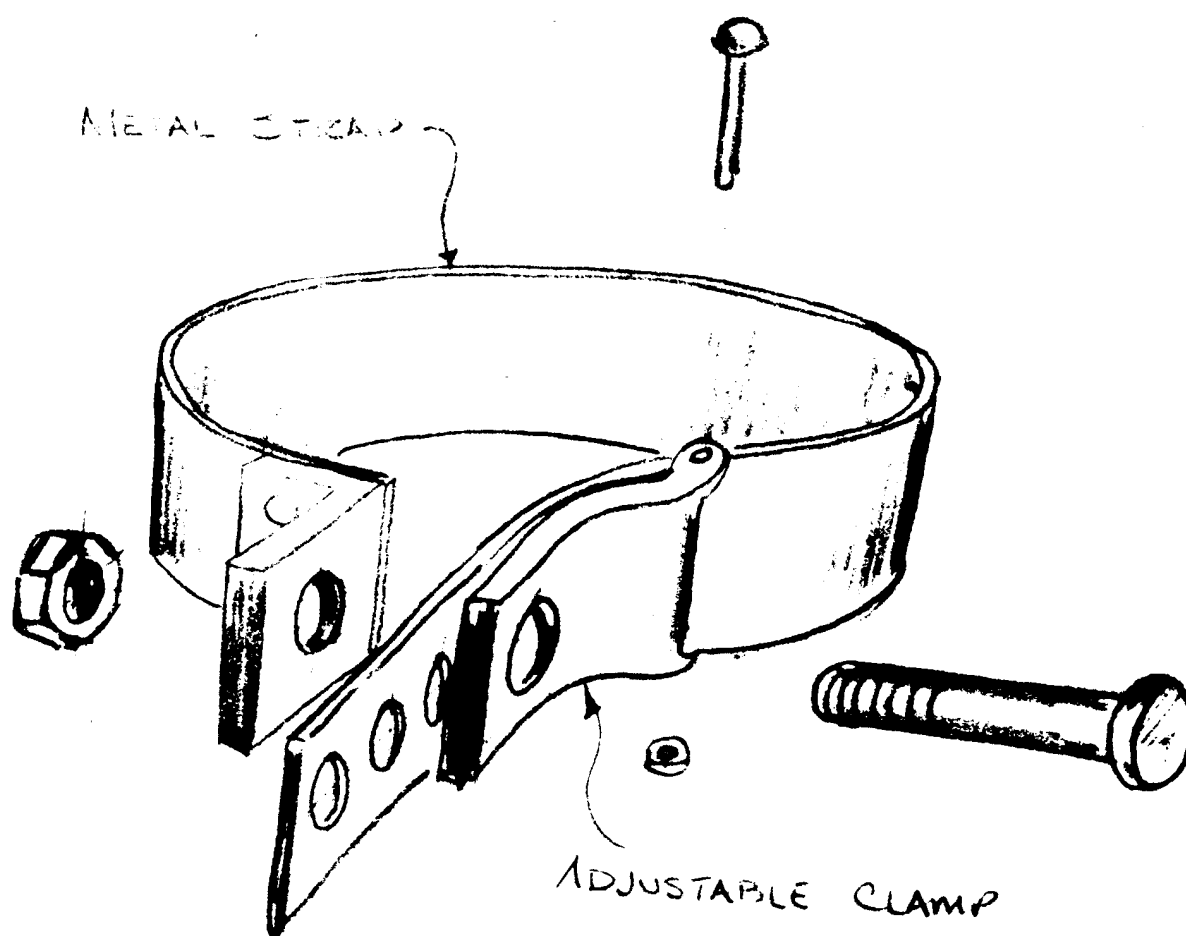


FIGURE 2